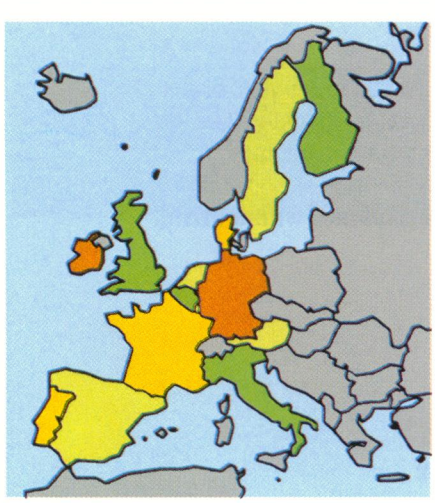
All's Not Quiet on the Western Front: Europe's Continuing Environmental Battle

From the cool northern climates of Scandinavia to the warmer regions along the Mediterranean, the countries of Western Europe face chronic environmental health problems that have evolved since the Industrial Revolution more than a century ago. Today, Western Europeans continue to struggle with the environmental legacy of their economic development, including extensive urban air pollution, accumulated pesticides and other chemicals in the soil, groundwater, and drinking water, acid rain, and the complicated disposal of hazardous and radioactive waste. Like other developed nations, they also face a variety of competing interests: how to reduce pollution levels while maintaining economic and industrial strength.

"Many of Western Europe's pollution problems and environmental laws are similar to ours here in the United States," says Michael Waters, senior scientist and associate laboratory director for international programs at the U.S. EPA. "Much of their environmental research is also analogous, including, for example, studies of automobile emissions in Italy and air pollution in Scandinavia."

Tied to climate, culture, human activity, and political and social commitment, each country has developed its own set of environmental issues to be addressed and strategies to deal with them. At the same time, national solutions have been both enhanced and complicated by the strengthening of the European Union (EU). Formerly known as the European Community, the EU shapes continent-wide environmental policies for its 15 member states: Britain, France, Germany, Italy, Spain, Belgium, Denmark, Greece, Ireland, Luxembourg, the Netherlands, Portugal, Austria, Sweden, and Finland.



In addition, numerous international agencies and organizations have developed departments that are also proposing solutions for Western Europe's environmental problems, including the Organization for Economic Cooperation and Development (OECD) and the United Nations Environment Programme (UNEP).

In recent years, the EU has passed a number of "very strict laws, very strict regulations, that had never been seen before in Europe," says Dinko Kello, director of the Environmental and Health Policies Unit for the World Health Organization in Copenhagen and secretariat to the European Environmental and Health Committee. "During the 1970s, when the United States was developing some of its most important environmental laws, Western Europe was, quite frankly, back in the Stone Age. In the 1970s, Europe was just starting to realize there was an environment."

"But today we can see a very major reduction of sulfur emissions throughout Western Europe, for example, because the legislation that had been discussed for years is now coming into force," says Kello. "One of the major achievements is the closing of 32 main coal mines in the United Kingdom. But one of the questions that still persists, since the Union [EU] is made up of sovereign governments, of course, is how to compensate those countries for their economic sacrifices. We have a five percent tax on all purchases throughout Europe which is partially used for that reason, to compensate countries in such conditions."

Last June, Kello organized a conference of 100 environmental and health ministers and other representatives from the various countries to address some of these issues. At the meeting in Helsinki, Kello says, the group was trying "to sort out some of the confusion and overlapping work that goes on. A lot of organizations are dealing with bits and pieces of the whole picture. You've also got the OECD, UNEP, the European Commission, the Council of Europe, and then many supporting organizations, including the World Bank."

Delegates to the European Parliament, the legislative arm of the EU, meet regularly in Brussels to set minimum environmental standards their countries must meet. The European Commission is the executive branch of the EU and also has the power to initiate, administer, and enforce legislation. In 1991, the EU issued 280 directives and regulations on environmental matters, including 120 on industry, trade, and pollution. In May 1993, 200 pieces of environmental legislation were passed. Kello says that Western Europe's "green parties" were often in the majority in the European Parliament during the 1980s and that their efforts were critical in developing and passing tough legislation in the parliament.

"Experience has taught us that the industries do not take the measures by themselves," says Ritt Bjerregaard, the EU's newly appointed Environment Commissioner, in the January–March issue of *Tomorrow* magazine. "That is why common [European] Union rules are clearly required for what emissions, effluents, and dangerous substances should be permitted and how they should be handled. . . . As a Dane, I have a spontaneous sympathy for and attachment to the environmental movements, but I must be aware of the strong and opposite interests in this area and try to handle them all. We must have public debate before decisions are made."

Shared Problems

Western European governments are often at odds over environmental issues, especially those without boundaries, such as acid rain and river-borne pollutants. Because the winds of Western Europe travel in a northeasterly direction, countries in Scandinavia and

northern Europe are hardest hit by acid rain generated farther south. For example, more than 60% of Holland's severe acid rain problems originate beyond its territory—a level it can reduce only with the cooperation of its neighbors. A 1993 international conference in Geneva failed to produce an agreement on decreasing acid rain in Western Europe; the United Kingdom was among those countries that refused to promise to reduce its sulfur emissions (one of the ingredients in acid rain) by the proposed 60%. Although the UK still relies heavily on the burning of coal, the chief source of sulfur dioxide, a 1991 report by the British Medical Association claims the country has reduced such emissions by 40% since 1970.

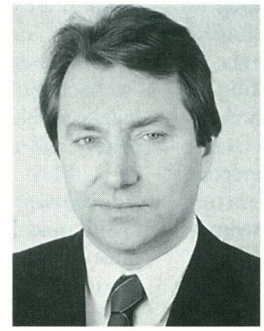
Despite a low overall infant mortality rate, infant respiratory-disease mortality in Western Europe remains three times higher than in North America, in part because of high levels of air particulates and sulfur dioxide, according to a 1993 report by Physicians for Social Responsibility. Air particulates and sulfur dioxide vapors can increase airway resistance when inhaled, especially in asthmatics. A 1987 World Health Organization report estimated that 5% of Western Europeans suffer from asthma.

In addition, countries bordering Eastern Europe, such as Finland, Germany, and Austria, must contend with ongoing migratory pollutants and other environmental threats from the former Soviet bloc. For example, Finland and its Scandinavian neighbors have been concerned with high pollution levels in the Baltic Sea, in great part a result of rampant industrialization and disregard for the environment in the former Soviet Union. In addition, the Austrian government is currently trying to stop the Czech Republic from building a Soviet-style nuclear reactor.

"Since they suffered from the effects of Chernobyl, the Austrians are concerned about the possibility of another severe accident if the reactor was not built to western standards," says David Schwarzbach, program associate for energy policy at the National Resources Defense Council in Washington, DC. "They're also concerned that wastes might not be properly handled and could migrate along some of their shared rivers."

But at the same time that many governments are seeking solutions to environmental problems, they must also focus on recovering from a nagging recession. This effort to combine environmental and economic concerns was widely discussed at the 1992 Rio Earth Summit, after which the EU issued its Fifth Environmental Action Program, called "Towards Sustainability—A Program of Policy and Action for the Environment and Sustainable Development."

For example, EU attempts to regulate emissions of chlorofluorocarbons (CFCs), implicated in the production of greenhouse gases, have often met resistance, especially from the French. The EU has directed its member states to phase out production of CFCs and other ozone-depleting chemicals, such as methyl chloroform, by the end of 1999, as agreed upon in the Montreal Protocol of 1987 and the Helsinki Meeting in late 1988. But although some countries have banned all production of CFCs before the end of the century, the compounds have a long atmospheric lifetime, and real reductions may not be seen for at least 100 years, according to the 1993 report by the Physicians for Social Responsibility.



WHO

Dinko Kello—Questions remain of how to compensate countries that make economic sacrifices for environmental gains.

EU member states are also required to run environmental impact assessments (EIAs) for major projects and wide-scale policy plans, examining them for potential effects on the environment, including air, soil, water, and public health. In Holland, for example, EIAs focus on energy-supplying industries such as coal, electrical, nuclear, and wind, defense (air bases, naval ports), harbors, artificial islands, and chemical and steel industries, among others.

Because its members are sovereign states with often conflicting agenda, the EU has been seeking ways to "harmonize" its many directives. A first step in this process is to integrate the separate protocols used in the many independent environmental studies conducted by industries, regulators, and international organizations. After the recent passage of an EU Harmonization Directive, the union's largest member states, including the United Kingdom, Germany, France, and Italy, agreed to review a major share of active investigations, resulting in less duplication, according to David Buffin, editor of *Pesticides News*, published by The Pesticides Trust in London. "This way, we can hopefully get more harmonization in the decision-making as well. Although each region has quite a different set of concerns, at least the data will be in agreement."

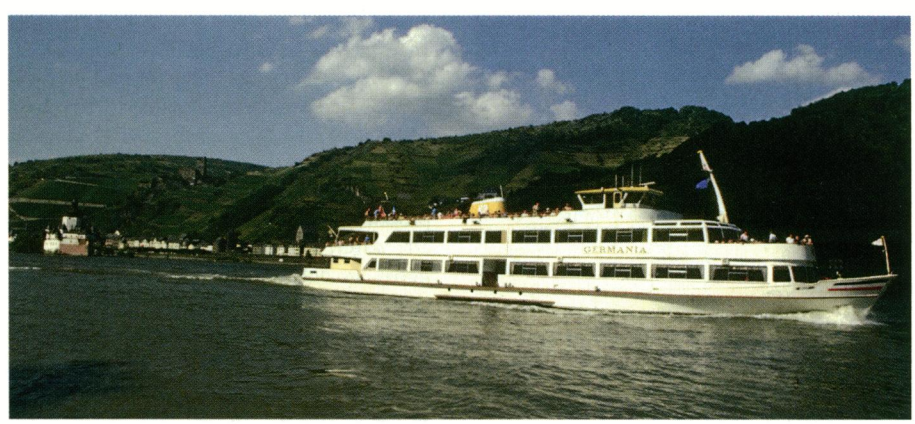
In addition, the OECD and the International Programme on Chemical Safety (IPCS) of WHO met in early March to hammer out a set of mutually acceptable conclusions and recommendations on chemical risk evaluations. While much of the discussion focused on the problems of getting good information to and from developing countries, the delegates recommended that a short-term pilot project be immediately undertaken "to ensure that completed evaluations had undergone examination by an internationally representative group of countries," according to the meeting summary. To make the review process easier, the IPCS and the OECD were "invited to develop a common harmonized format, together with guidelines for the preparation of evaluation documents, including Good Assessment Practice."

The Netherlands

Despite limited natural resources and its vulnerability to flooding, Holland has become a highly successful agricultural and industrial nation thanks to a sophisticated system of dikes, pumping, and draining. However, with half of the country below sea level and a rapidly growing population, Holland is also heavily polluted. One sign of this environmental decline: the otter, whose presence indicates water quality and healthy riparian ecosystems, is now extinct in Holland.

"Holland in particular has the problem of post-war industrial development and pollutants taking decades to percolate through to the groundwater," says Buffin. "This is causing a lot of worries in Holland—sort of like a bomb ticking away. And once you've contaminated the groundwater source, it's almost impossible to clean. Being located on lowlands makes the Dutch rely heavily on groundwater, but it also means the water is even more vulnerable to contamination."

Flowing from eastern Switzerland

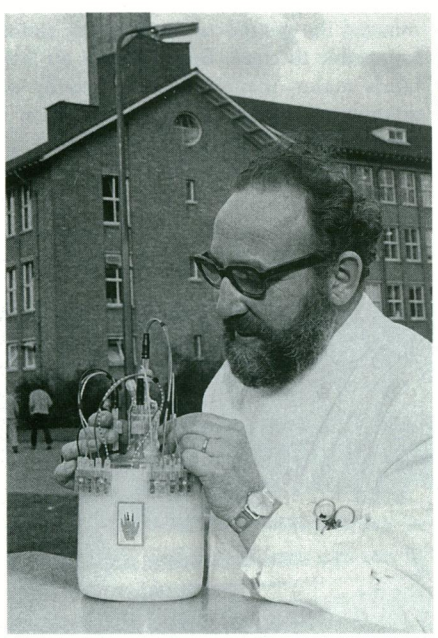


A clear success. Cleanup of the once heavily polluted Rhine River is one sign of progress.

through Germany to its North Sea delta in Holland, the Rhine River deposits industrial pollutants along its banks and into the sea. In recent years the EU has been working to "depollute" the North Sea as one of its many transnational projects. "The Rhine is a fantastic success story," says Kello. "It's a wonderful example of Western European countries coming together to solve a particular environmental problem. And the best news is that fish are now coming back to live in the Rhine."

Nearly half of Holland borders the North Sea, making it an area of particular concern, says Buffin. For example, persistent organochlorines are draining into the North Sea, not just from Holland but from Eastern Europe and the United Kingdom. Studies have shown a buildup of the organochlorine toxaphene in mackerel, dolphins, and porpoises in the North Sea, especially around Ireland and Scotland. But toxaphene has never been used in Europe. It is believed the chemical may have traveled for years from the United States or the Caribbean, where it was once used in cotton production. Toxaphene was banned in the United States in 1982.

In response to environmental degradation, the Dutch have developed a National Environmental Policy Plan (NEPP) that is rapidly attracting international interest. In presenting the plan in 1989, the Dutch government announced that "unless we set a different course quickly and resolutely, we are heading for an environmental catastrophe. . . . Therefore, the NEPP initially deals with environmental hazards caused by traffic, curbing carbon dioxide emissions, taking remedial action in cases of soil contamination, tackling acidification, and gaining better control of the entire waste chain."



WHO by T. Farkas

Breathing machine. Scientists at the Institute of Public Health at Bilthoven, The Netherlands, monitor sulfur dioxide in the air.

For example, the NEPP "seeks a fertilizer balance" to handle problems caused by agriculture and industry, according to a May 1994 article in *Environment* magazine. Under NEPP guidelines, groundwater must meet standards similar to those of drinking water; no more phosphate and nitrate may enter water and soil than can be absorbed through natural processes. The policy also calls for a 50% drop in the use of pesticides by the year 2000, an 80% reduction (relative to 1980) in sulfur dioxide emissions, and a 75% reduction in auto emissions of nitrogen oxides and hydrocarbons.

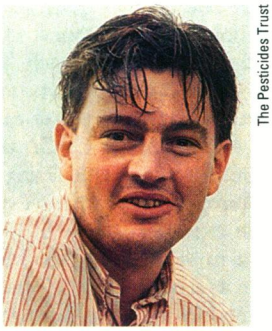
With its concentration of petrochemical industries, the shipping city of Rotterdam, considered the largest port in the world, is also the most polluted city in Holland, according to Ronald van der Oost, an ecotoxicologist at the OMEGAM Environmental Research Institute in Amsterdam. "Amsterdam is moderately polluted," he says, "in part because of ships traveling through the canals and sediments discharged from several sites. However, it's not very clear what the exact sources of pollution are in the canals. There are also pesticides from agricultural uses, and although the insecticide DDT is banned, there are still traces, along with PCBs from industry, detectable in the environment."

Inland lakes are also subject to pollution which migrates along streams and through underground leaching. The Bodensee, or Lake Constance, covers 207 square miles along the borders of Germany, Austria, and Switzerland. Through strictly enforced legal measures, the Vienna-based International Commission for the Protection of Surface Waters at Lake Constance has had considerable success in getting phosphates reduced in the lake from 87 to 43 milligrams per cubic meter from 1979 to the present.

Southern Continental Europe

In what the July/August 1994 issue of the *Bulletin of Atomic Scientists* referred to as the French "mess nucleaire," author Mary Byrd Davis criticized the French nuclear program for its "near-total secrecy regarding its waste-disposal practices." Davis noted that weapons production has spread contamination in the air, water, and ground. Military sites, she noted, are not regulated like civilian sites, and few environmental laws cover them.

Until such accidents were made public several years ago, a plutonium fire 37 kilometers from Paris in the 1960s was kept secret, as was a "mix-up" in fuel rods in 1974 that seriously contaminated a French plutonium workshop. In 1977, seven tons of uranium hexafluoride were released from a nuclear plant, creating a visible cloud of hydrofluoric acid. Nuclear sites in general, Davis reported, have been targeted as a source of air and water pollution, including suspect effluents released into rivers and ponds. For example, mercury released through sewers and into the air have led to detectable levels in lakes near the Mediterranean.



The Pesticides Trust

David Buffin—Members of the EU are working toward harmonization of research and decision-making.

In a dramatic case of accidental exposure to chlorinated hydrocarbons, a fault in a reactor in a chemical plant released dioxins into the atmosphere at Seveso, Italy, less than 20 miles north of Milan. The 1976 accident contaminated seven square miles around the plant and forced 900 people out of their homes. Though no one died as a result, residents near the plant suffered burns and skin rashes from exposure, followed by the symptoms of chloracne, a disfiguring skin disease caused by the exposure to dioxins and other chlorinated organic compounds. Studies on other effects of exposure are considered unreliable because few baseline data were collected before the accident. However, some records have shown an increase in soft tissue sarcomas, as well as a rise in the malformation rate among live births from 1.03 cases per 1,000 in 1976 to 19 per 1,000 in 1978.

The second largest country in Europe, Spain's urban air pollution levels regularly exceed the average for western Europe. In addition, tourism has damaged beaches in the Catalonia region and along the Mediterranean. Inadequate sewage and water treatment facilities have also contributed to severe pollution in the sea.

Traditionally lagging in environmental awareness, Spain has become more "eco-conscious" in recent years. For example, the Spanish plastics manufacturers established a special foundation to help increase environmental awareness throughout Spain. A September 1992 article in *Business America* asserted that "Spain has achieved remarkable economic growth at the expense of environmental concerns. But increasing pressure to comply with EC standards is now forcing Spain to address those concerns."

As the most polluted country in Europe, Portugal received more than $3 billion in structural funds from the EU in 1994 and 1995. The funds are earmarked to help improve site remediation, industrial effluent, urban water management, and solid waste collection, removal, and disposal. The Portuguese government is also working on improving the supply of potable water to urban areas and the safe removal of waste-

water. One area hard hit by such public sanitation problems is the Algarve province in southern Portugal, world-renowned as a tourist destination. During the high season, the Algarve population doubles to more than 800,000, increasing pressure on an already weak civil infrastructure.

The United Kingdom

In the 19th century, London became notorious for a thick black smog caused in part by incomplete combustion during the widespread burning of coal. Thousands of Londoners died from acute respiratory illnesses. In 1952, more than 4,000 people died as a direct result of air stagnation that caused a concentration of atmospheric pollutants, especially sulfur dioxide and suspended particulates, according to the 1993 Physicians for Social Responsibility report. Chronic bronchitis has been so common in the United Kingdom, that it is often referred to as "the English disease."

After the British government passed its first Clean Air Act in 1956, pollution levels began to drop dramatically. Industries were told to improve their combustion processes, and some workplaces stopped using coal altogether. Over the next 30 years, ambient smoke fell by almost 90% and ambient sulfur dioxide levels by 40%. However, London air pollution levels continue to regularly exceed WHO guidelines. To address this chronic problem, the British Royal Commission on Environmental Pollution plans to recommend stronger enforcement of regulations, as well as an increase in fuel taxes, which by discouraging consumption would help reduce carbon dioxide emissions, according to a July 1994 article in *The Economist.*

WHO by L. Taylor

Stripped sentinels. Acid rain from industrial pollution has decimated entire forests in Europe.

It is believed that food grown in England may be contaminated through the common practice of using sewage sludge, often laden with heavy metals, as a fertilizer for edible crops. Recent soil quality studies have revealed traces of zinc, copper, cadmium, nickel, and chromium on such farmlands. EU sludge regulations for 1996 will restrict the use of sludge as a fertilizer for edible crops, but some observers have suggested that heavy metals should simply be removed from the waste at its source, thereby allowing sewage sludge to be "recycled" for use on land. However, in April 1994, the United Kingdom criticized an EU wastewater treatment directive to remove phosphorus from discharged sewage because of the high cost of compliance for British sewage treatment facilities.

"Another rather big issue in the UK is the very high levels of breast cancer, especially in certain agricultural regions," says Buffin. "We believe this may be associated with organochlorines, especially lindane, whose levels are particularly high in vegetable production." Lindane, an insecticide with a slow rate of biodegradation, has been detected in the blood and fat tissue of the general public in a number of countries, probably as a result of food contamination, according to a 1993 report by Physicians for Social Responsibility.

"If you compare the UK today with five or more years ago, there is now a much greater acceptance that we can potentially cause problems through anthropomorphic activity," says Buffin. "But I think in terms of the European Union as a whole, the UK is seen as a country that keeps questioning everything. Society is still very split on many issues."

WHO/UN Photo by Zafar

Toxic playground? On World Health Day in 1988, children play outside a nuclear facility in France.

Scandinavia

In 1971, Denmark became the first industrialized European country to establish a ministry that focuses exclusively on environmental matters. In 1988, the Danish government established a set of stringent policies to combat the greenhouse effect by lowering carbon dioxide emissions. One highlight of that plan is the Rube Biogas plant, located in the flat marshlands of southwest Denmark, which converts farm fertilizer and slaughterhouse wastes into a clean energy source. The Danes also plan to expand their use of windpower and other alternative energy forms.

With 70% of their land covered by thousands of lakes and thick forests, most Finns live in the southern part of the country. Finland shares much of its eastern border with a heavily polluted region of Russia as well as its shoreline with the Baltic Sea, contaminated in part by industrial development in the former Soviet Baltic republics, Estonia, Latvia, and Lithuania. To help prevent further problems, the Finnish government has developed a program to work with Eastern European countries on environmental protection measures, especially on airborne and waterborne pollutants carried by the Baltic.

Among the countries of Europe, Sweden is often considered the most environmentally conscious of all. Attempts to remedy problems cross all sectors, according to Buffin. "There's always a lot of agreement from the beginning," he says. "Whenever the Swedes look at a program, everyone agrees on the best thing to do. Sweden's environmental laws are very strong and in fact much stronger than any other country. And now that they have voted to join the Union [in fall 1994], they may try to raise the level of environmental laws in other European countries."

As WHO's Kello points out, Western Europe has now emerged from the "Stone Age" and is well on its way to effectively managing its environmental and health problems. But perhaps the region's greatest asset—its rich patchwork of cultures and histories—may also present its strongest challenge: reconciling the needs of individual nations with the needs of an entire region of nations. In the areas of environment and health, sovereign governments must reach beyond their boundaries to seek solutions compatible to both sets of interests. With more transnational cleanup efforts and stricter regulations concerning air, water, and soil quality, the whole may well become greater than the sum of its parts.

Rebecca Clay

Rebecca Clay is a freelance journalist in Washington, DC.